USACE: BALTIMORE DISTRICT
National Planning Center of Expertise for Coastal Storm Damage Reduction
US Army Corps of Engineers
North Atlantic Division
Planning to save lives in the future.

# National Hurricane Program Office

## Program Study Leader: Michael

# Discussion Topics

- What is the NHP
- PCX Introduction to the NHP
- PCX Mission and Goals
- Program Organization
- What is a Hurricane Evacuation Study
- HURREVAC
- Storm Surge GIS Mapping Tool Demo
- Questions?

- Established 1985
- Mission: Support projects and activities to protect communities
- Partners: FEMA, NOAA, NWS, USDOT, USACE and others
- Special FEMA/USACE relationship to:
  - conduct Hurricane Evacuation Studies (HES)
  - develop and manage software tools (e.g., HURREVAC & ETIS) used by local emergency management agencies

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# National Hurricane Program

- Radically change the NHP by:
  - Established National Program Office
  - Automating HES process
  - Ensuring HES consistency
  - Comprehensive Training Program

***"ACHIEVE THROUGH PCX"***

# FEMA/USACE Vision for NHP

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# MISSION STATEMENT:

*"To help protect communities and residents from hurricane hazards by conducting assessments, providing tools, and technical assistance to State and local agencies in developing hurricane evacuation plans."*

# PCX/NHP Office Mission

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**GOAL 1:** Maintain and Evolve the USACE NHP

**GOAL 2:** Oversight and Automation of Hurricane Evacuation Studies (HESs)

**GOAL 3:** Manage and Modernize Software Products (i.e., HURREVAC and ETIS)

**GOAL 4:** Create a HES Training Plan for Federal, State, and local emergency managers (through SAD)

**GOAL 5:** Maintain and Improve **COORDINATION** between FEMA and USACE

# PCX/NHP Office Goals

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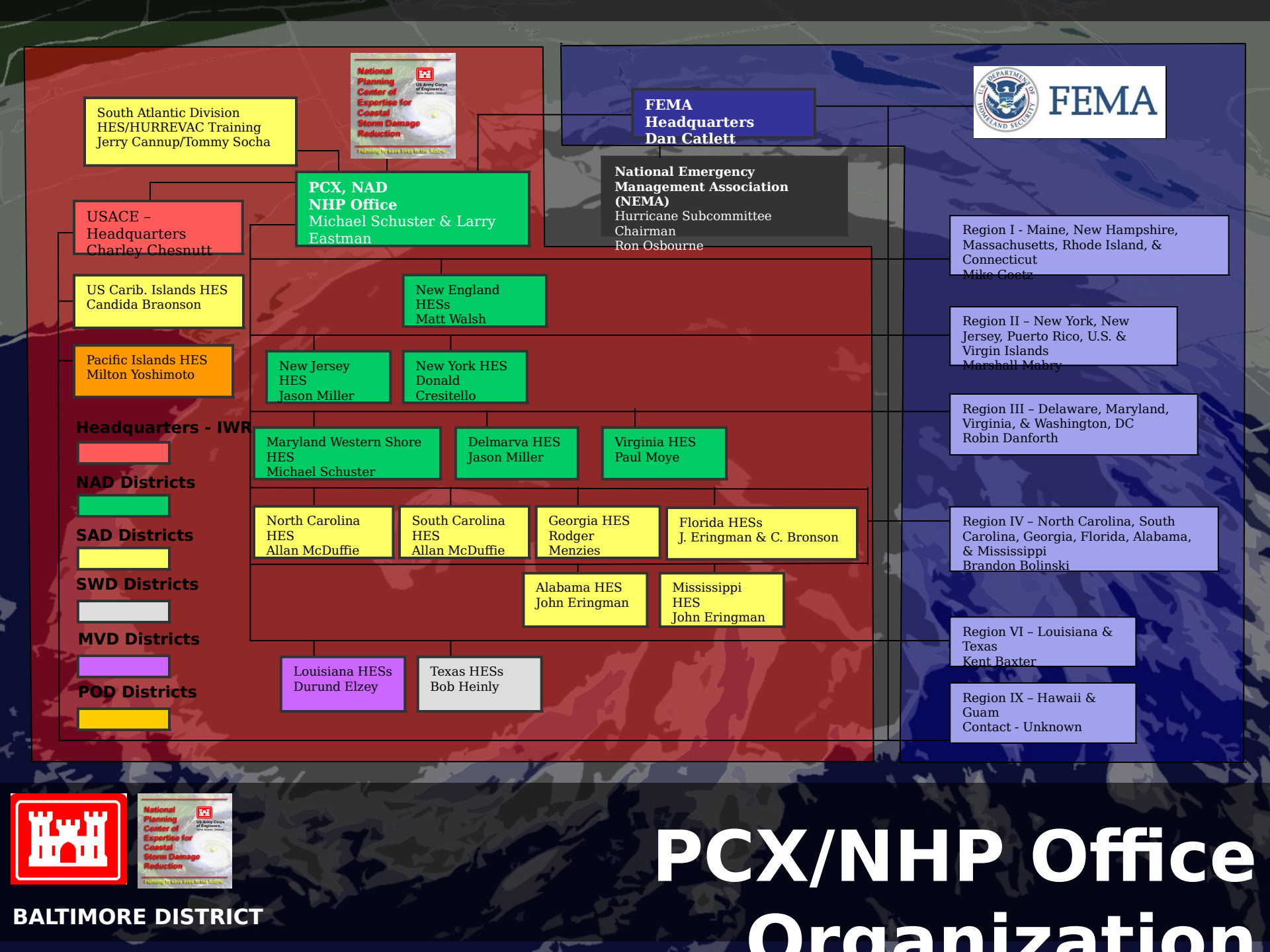


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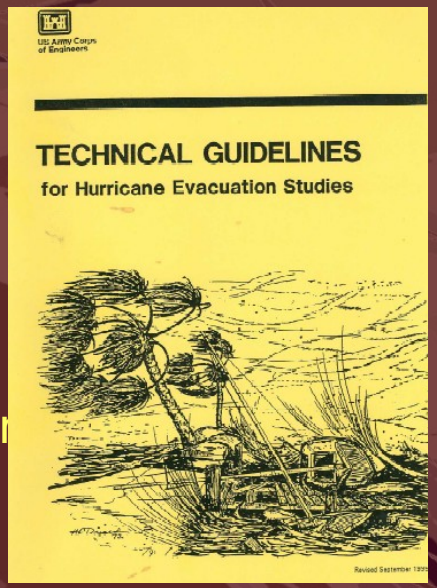
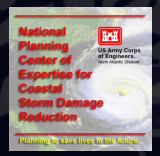
# PCX/NHP Office Organization

# FIVE MAJOR STEPS:




- Hazards Analysis
  - Storm Surge GIS Data
- Behavioral Analysis
  - Survey of Human Behavior regarding Evacuation
- Vulnerability Analysis
  - Creation of Evacuation Zones
  - Determine Vulnerable Population and Points of Interest
- Shelter Analysis
  - Vulnerable Population vs. Shelter Capacity
- Traffic Analysis
  - Clearance Times

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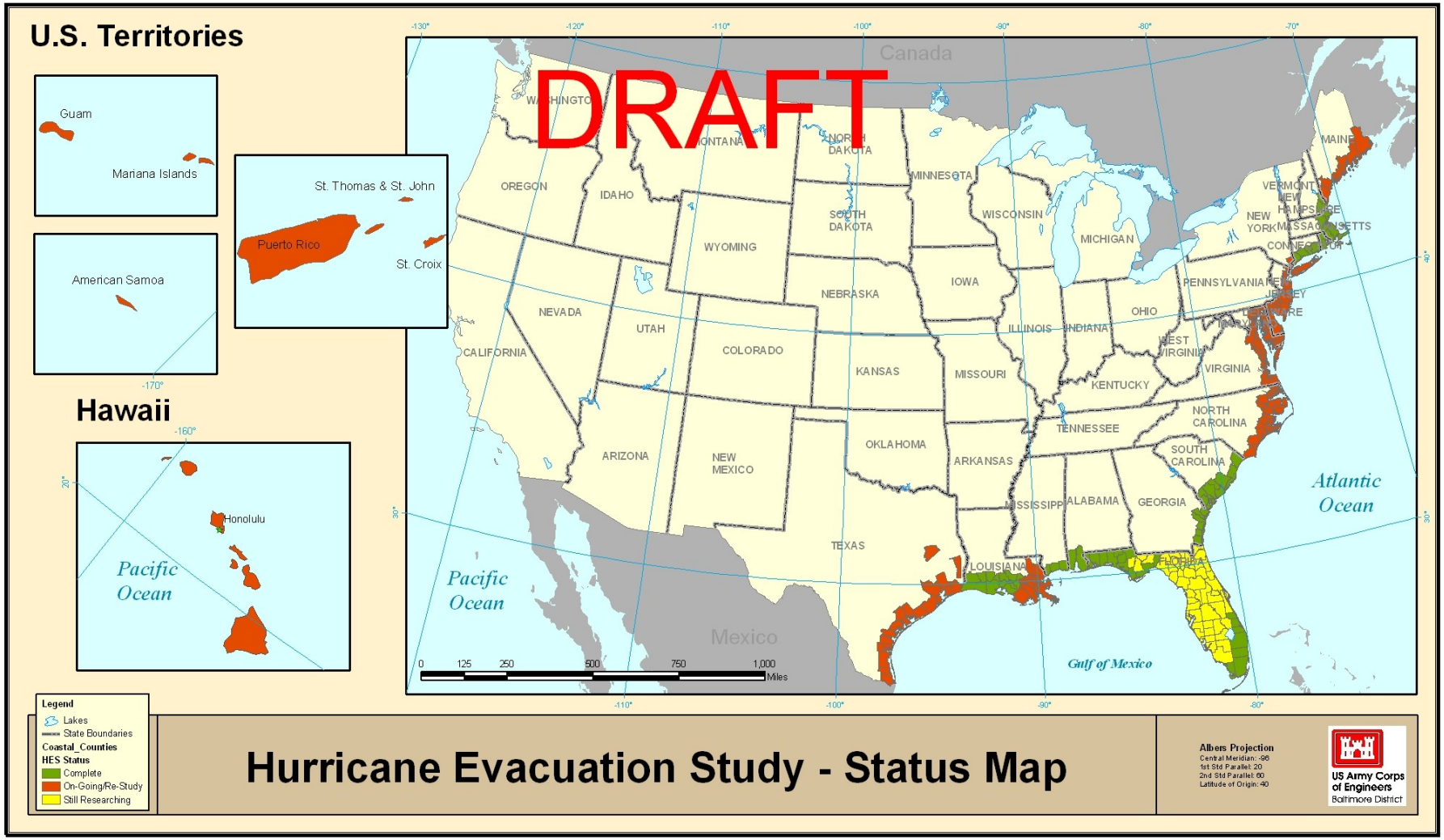
# HES Process

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# HES Status Map

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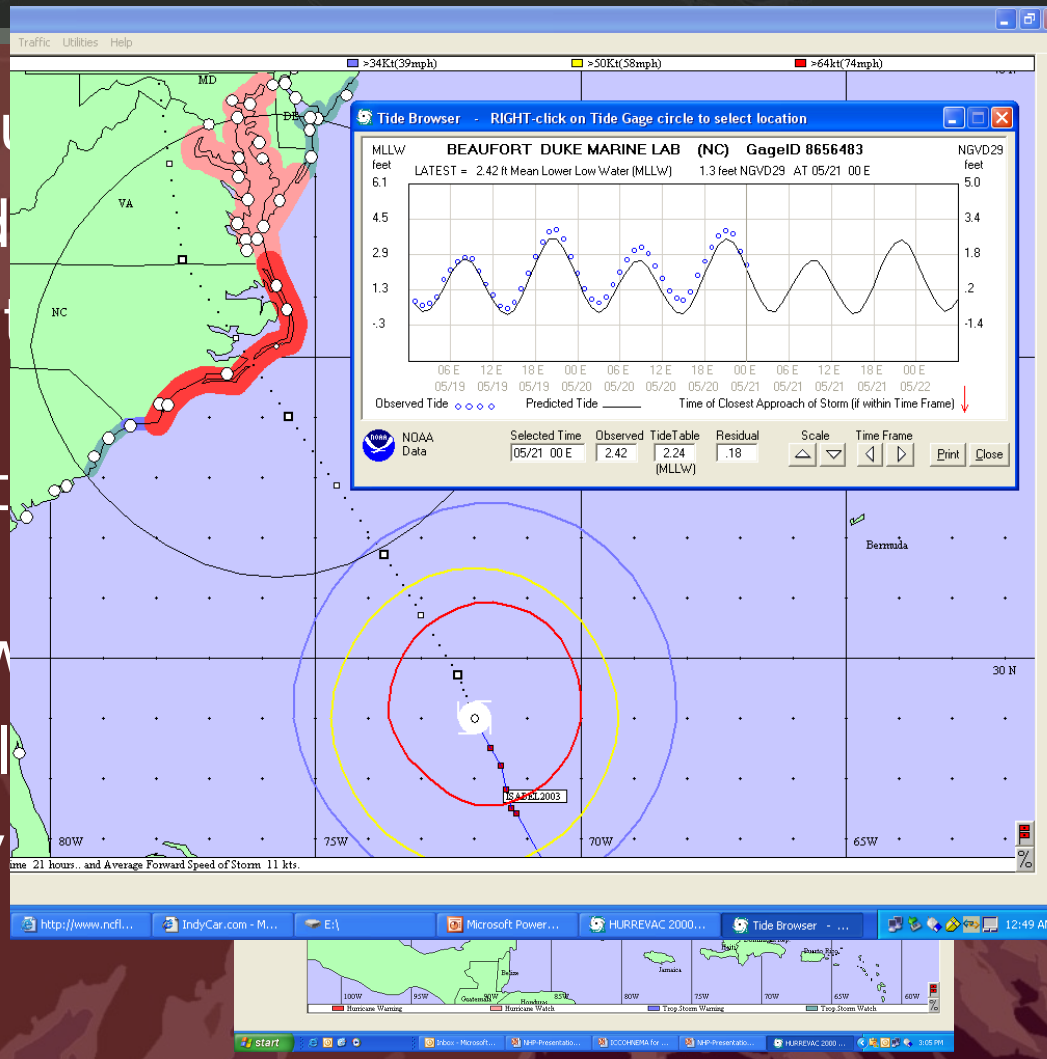
- Restricted-use compu
- Funded by FEMA and
- Atlantic and Pacific s
  capability
- Used by government
  managers
- 18,000 users world-w
- Decision making tool
- Real-time data analy
  - Storm Tracking
  - Wind Speed
  - Path Forecasting
  - Transportation Clearance Times
  - Tidal & River Gauges



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# HURREVAC

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## Vision of the Future

- Seamless Coordination with FEMA
- Replace the current HES process with a Comprehensive Hurricane Evacuation Management Strategy (CHEMS)
- Improve Corps District's Capabilities to support the PCX and produce NHP products

## Challenges

- Coordination with FEMA HQ, FEMA Regions, and Districts
  - Multiple Stakeholders
- Increase Corps funding contribution to the NHP
  - Only 15% of the NHP funding comes from the Corps

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# PCX/NHP Future and Challenges

- GIS DATA
  - SLOSH (NHC/NOAA)
  - Elevation Data (LIDAR & USGS)
- Analysis = Difference between the height of flooding and the elevation of the land

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# HES Storm Surge GIS Mapping

- **SLOSH** = Sea, Lake and Overland Surges from Hurricanes
- Computerized model created by the National Hurricane Center (NHC)/NOAA
- Estimates storm surge heights from potential hurricanes

# What is SLOSH?

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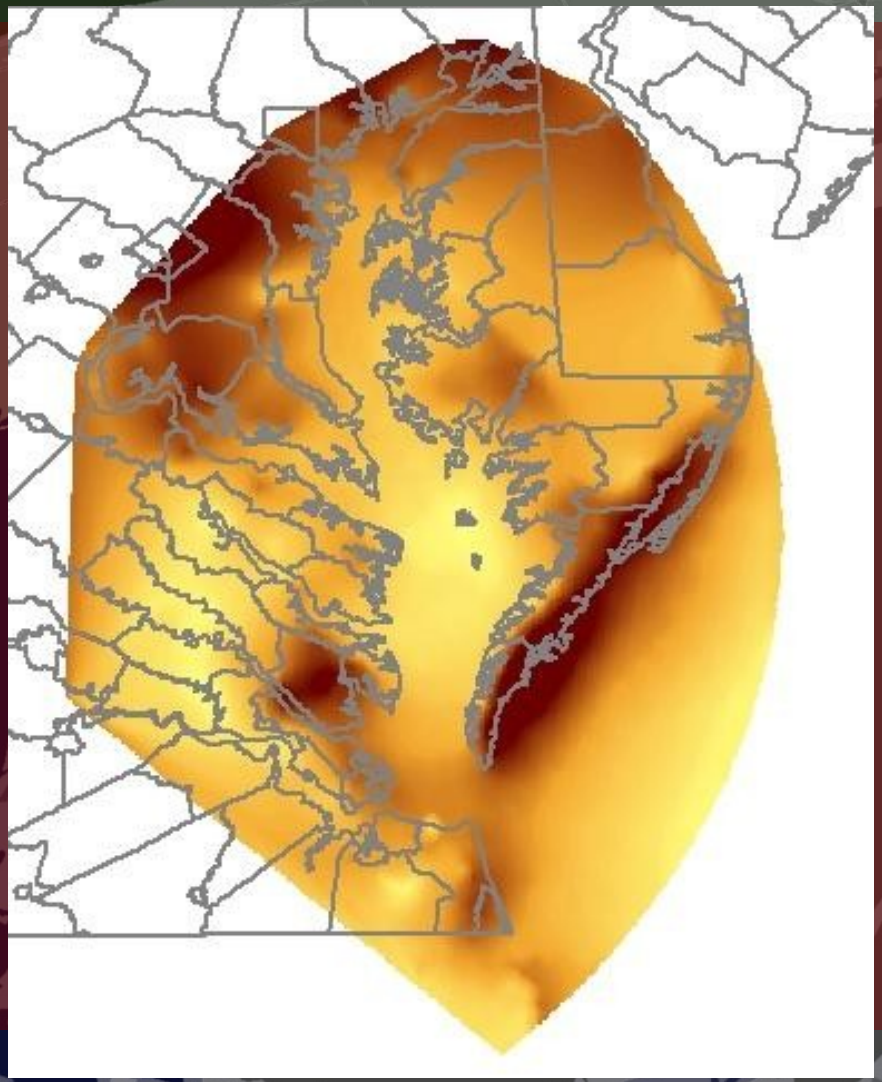

- Raw SLOSH data, showing Category 4 flooding in polygon shapefile format

- Converted to point data using centroids of shapes

- Interpolated point values to grid for use in HES model.

- Values converted from NGVD 29 Feet to values in NAVD 88 Meters to match LIDAR and DEM data

# SLOSH Interpolation

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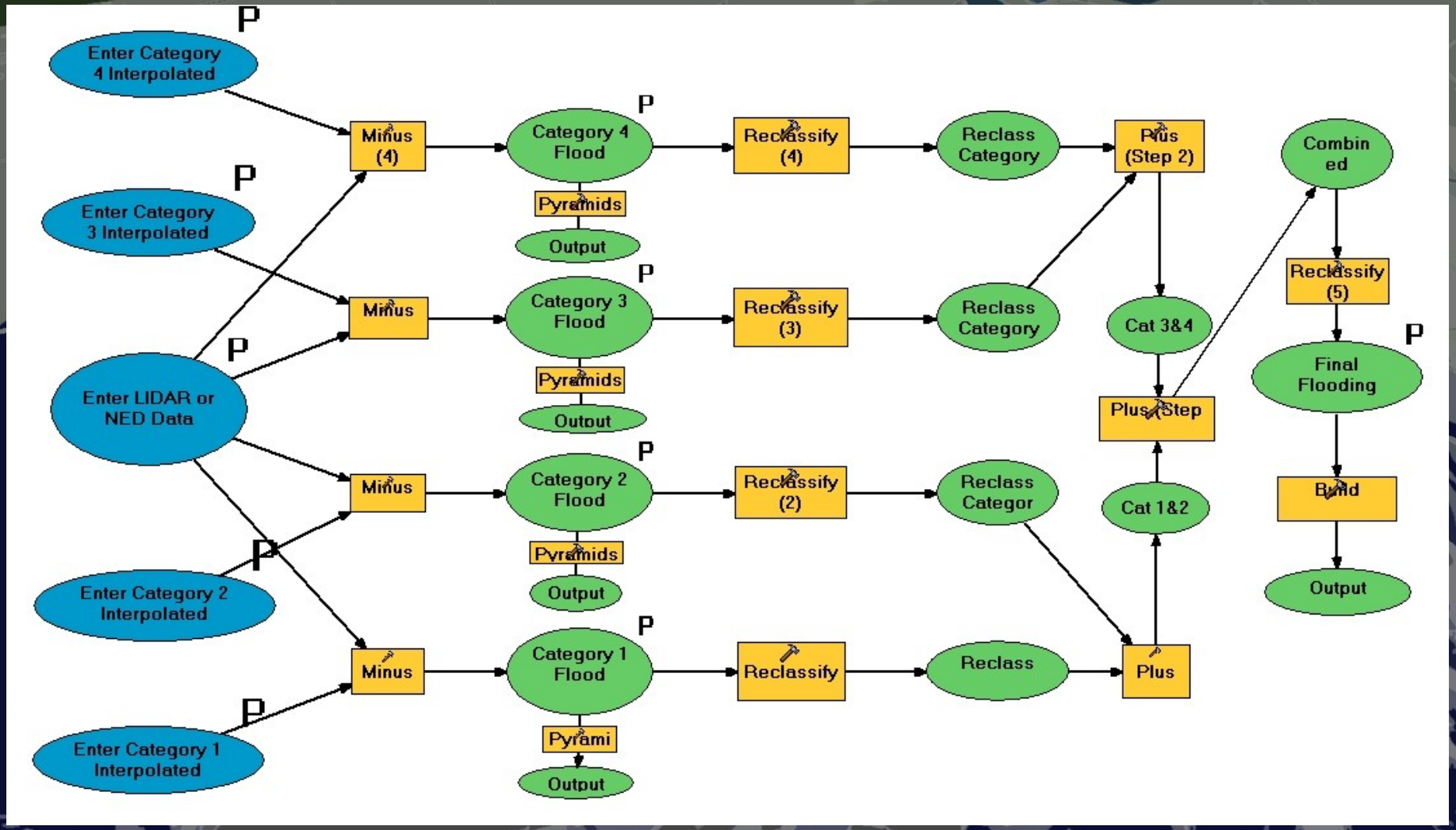


# ArcGIS ModelBuilder

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- Raw model output as raster
- Smoothing model created to transfer flooding from raster data into easy to use polygon format

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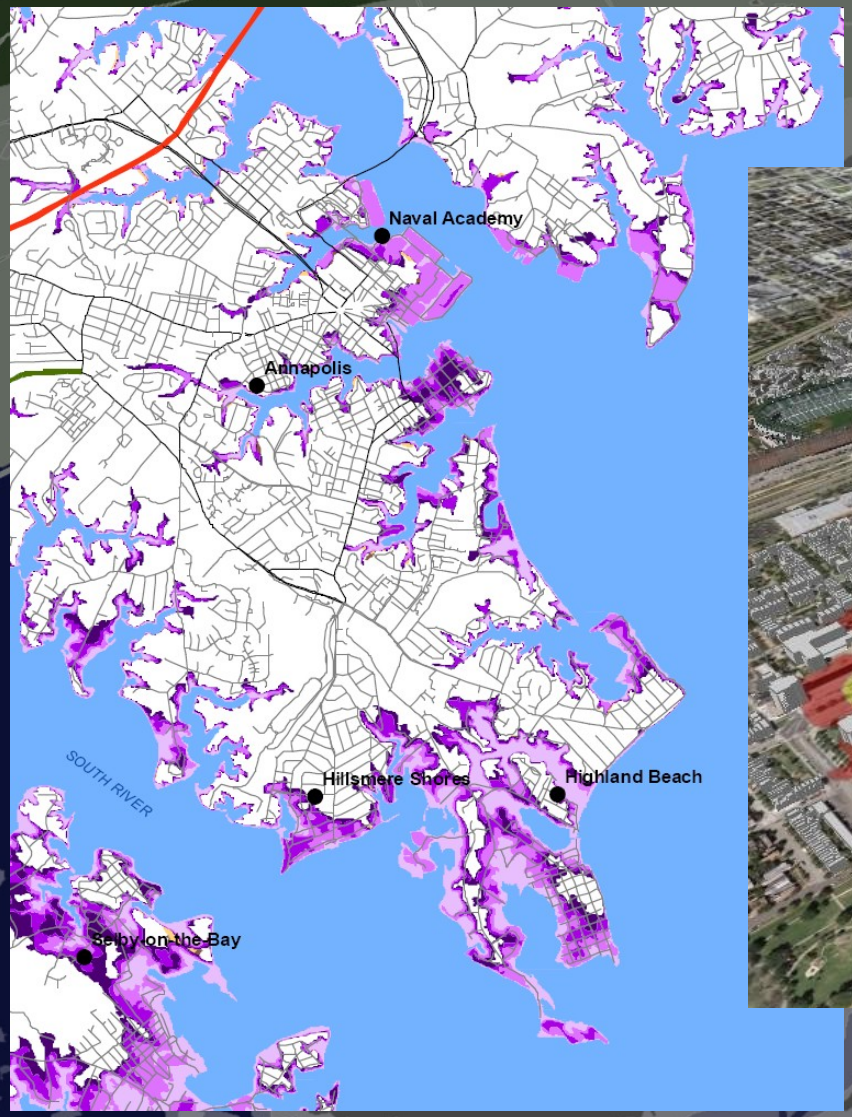
# ArcGIS ModelBuilder Process



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# Final Storm Surge Mapping

# QUESTIONS?


Program Study Leader

Michael Schuster, AICP

Phone: (410) 962-8160

Email: Michael.J.Schuster@usace.army.m

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